

ELECTROSTATIC DISCHARGE PROTECTION NETWORK HAVING DISTRIBUTED COMPONENTS

Abstract of the Disclosure

An electrostatic discharge protection network comprising electrostatic discharge (ESD)
5 clamp devices distributed between turns of a coil shaped inductor. The inductance of the coil
shaped inductor and parasitic capacitance of the ESD clamp devices form a low pass filter
structure having a very high cut-off frequency. Below the low pass filter cutoff frequency, the
capacitive influence of the ESD clamp devices are cancelled by the series inductance of the coil
shaped inductor. The turns of the coil shaped inductor may be fabricated on insulation layers
10 proximate to one another so as to achieve close magnetic coupling therebetween, thereby
achieving a larger inductance value for a given sized coil structure. Improved input and output
impedance matching is also achieved by adjusting the inductive and capacitive components of
the low pass filter structure formed by the coil shaped inductor and capacitance of the ESD
clamp devices. The components of the electrostatic discharge protection network may be
15 fabricated on an non-conductive substrate of various types of materials, on a printed circuit
board or chassis with discrete components, and on a monolithic semiconductor integrated
circuit die.